SOLOMON WORKING GROUP MEETING NOTES

10:30 a.m. Tuesday, May 5, 2009
Stockton, Kansas

Attendees: Ray Luhman (GMD4), Andrew Lyon (DWR), Darci Paull (DWR), Scott Voss (DWR). Tara Lanzrath (DWR), Jack Wergin (USBR), Bill Peck (USBR) were in attendance via telephone.

Andy Lyon led the presentation via conference call and glance session with the remote attendees.

Model Presentation

Andy began the presentation by explaining that the South Fork model had been handled in the same fashion as the North Fork model domain as requested by the working group at the previous meeting. Then he began to point out a few differences between the two model domains.
He pointed out that for the South Fork model domain the overall decreasing trend in boundary flow contributions to the water budget over time are interrupted by stints of slight increases in years in which higher rainfall events occur. The North Fork domain did not exhibit this phenomenon graphically, indicating that precipitation events affect boundary flux more readily in the South Fork domain. Andy then showed a graphic representation of how the future boundary flows were handled which displayed a regression equation extending the historical declining trend. Andy noted that all the scenarios were using this boundary flux condition and voiced his concern that perhaps the regression line is a bit too aggressive of a decline and not likely reflective of future conditions.
Ray seemed to agree that it may be too aggressive and added that the line should likely begin to level out given diminished well capacities over time leading to less groundwater pumping over time—a factor looked at to be added into the NWKS hydrologic and economic models. Ray also asked if there would be any way to use a higher degree equation to more closely exact the historical trend. Andy concurred that a case could certainly be made for using a less aggressive trendline for boundary flows and that KDA-DWR would likely work to make this change within the South Fork domain.
Bill questioned, "How do we know if the other (North Fork) model is not aggressive enough?" Andy said that was a good point and the way to check would be to go back and compare it to the regional (NWKS) model and its interaction over time to the two Solomon models for comparison of values across the boundary.

Andy then moved on to the Water Budget Summary slides which provided numerical values in acre-feet for each component of the water budget for each scenario:

1. Continued status quo pumping (using 2005 pumping rates)
2. Ogallala vs. Alluvial pumping- manipulate so one is on while other is off and vice versa
3. Turn off all pumping
4. Lower ET to see the outcome of eliminating or reducing phreatophytes
5. Turn off pumping in marginal soils
6. Eliminate years with anomalously high precipitation from the model

Andy noted the difference between historical and status quo recharge values. The table that was discussed in the presentation is included below.

	Storage	CHD	Wells	River	ET	Recharge	Stream
HISTORICAL	**995**	**-**	**(2,869)**	**(1,387)**	**(9,325)**	**18,860**	**(6,274)**
Status Quo	**3,949**	**-**	**(5,946)**	**(2,428)**	**(6,437)**	**12,465**	**(1,606)**
Only Alluvial Pumping	**2,001**	**-**	**(3,364)**	**(2,493)**	**(6,742)**	**12,465**	**(1,871)**
Diff from Status Quo	*1,948*	*-*	*(2,582)*	*65*	*305*	*-*	*265*
Only Ogallala Pumping	**3,560**	**-**	**(2,582)**	**(2,915)**	**(7,510)**	**12,465**	**(3,022)**
Diff from Status Quo	*389*	*-*	*(3,364)*	*487*	*1,073*	*-*	*1,416*
No Pumping	**1,754**	**-**		**(3,069)**	**(7,692)**	**12,465**	**(3,463)**
Diff from Status Quo	*2,195*	*-*	*(5,946)*	*641*	*1,255*	*-*	*1,857*
Lower ET	**3,679**	**-**	**(5,946)**	**(3,083)**	**(3,871)**	**12,465**	**(3,245)**
Diff from Status Quo	*270*	*-*	*-*	*655*	*(2,566)*	*-*	*1,639*
No Marginal Soil Pumping	**3,746**	**-**	**(5,097)**	**(2,519)**	**(6,719)**	**12,465**	**(1,880)**
Diff from Status Quo	*203*	*-*	*(849)*	*91*	*282*	*-*	*274*
No Anomalously High Precip	**5,189**	**-**	**(5,946)**	**(1,793)**	**(5,999)**	**8,635**	**(91)**
Diff from Status Quo	*(1,241)*	*-*	*-*	*(635)*	*(438)*	*3,829*	*(1,515)*

Ray then questioned if the component labeled River was the amount in acre-feet gained to the reservoir as storage under the scenarios. Andy touched on the fact that the model has accounting cells which added to the entire domain contribute to the water budget. Ray asked where the River accounting cells were located and Andy told him they are on the very east border of the model domain. Andy further explained that the River and Stream components together act to account for the amount of water gained to storage in the reservoir. However, this is with the caveat that the model accountings for the River and Stream components do not consider any additional water input into the system via runoff events that would contribute to a reservoir elevation rise.

Andy then continued by reviewing graphics of water level drawdown trends for the scenarios. Alluvium pumping only and No pumping were the only two trends that did not show significant declines in the western part of the model domain. All others showed a trend of water level declines in the western edge of the domain with declines lessening as you move eastward through the model domain. Andy also provided a drawdown graphic displaying a no pumping trend with a status quo boundary flux rather than with the regression equation accounting for changes. This resulted in a condition when compared to that with the regression line witnessed much less drawdown in all areas of the domain.

One of the slides showed an overview with both the Solomon model domains and the resulting water level contours from the NWKS status quo scenario. Jack inquired as to whether the significant area of decline on the western boundaries of the Solomon domains was where one of the GMD 4 High Priority Areas is located. Ray confirmed that general area is where the

Sheridan County High Priority Area number 6 is located, but to be more accurate he would need the townships and ranges labeled on the map.

Working Group Discussion

After the presentation, Working Group members discussed a few more topics. As was the case with the North Fork model, the scenario of a reduction in ET seemed to have a great degree of impact in terms of freeing up water to be accounted for elsewhere in the budget. With this in mind, Darci invited the group to discuss the possibility of tamarisk control as measure to reduce ET and asked the group if they felt it would be a worthwhile venture. She had researched a few projects elsewhere and provided a cost quote to treat tamarisk at $840 per acre. This sparked some discussion and some questions to be answered.

Ray asked if anyone had a handle on where the tamarisk is and what the densities are because if there aren't many controllable stands it certainly may not be worth the time and expense to go forward with eradication and/or mitigation efforts if significant water savings was not witnessed. Scott provided that from general observation most tamarisk occur around the reservoirs; often either immediately above or below. Andy provided that there was a study done by the KBS that may be of help to determine tamarisk stands, but was not aware of a shapefile coverage or a method to determine locations short of doing some field level reconnaissance. Jack then asked what number of reduction was used for the ET scenario and Andy reminded the group it was a 50% reduction. Bill had noted that if salt cedars or other invasive phreatophytes were removed, then wouldn't the model need to account for the ET component of the species replacing the invasive composition? This was noted as a valid point as the model was completely removing all ET components under the assumed 50% reduction scenario.

An additional discussion point was the use of a drought contingency plan in drought years or when certain baseflow triggers were met. Ray then questioned this approach asking whether we should work to preserve baseflow if the resulting gain to the reservoirs is not sufficient to witness a recreational benefit after accounting for evaporation losses. He also noted that the Webster and Kirwin historically have both been driven (filled) by large rainfall events. Jack then intervened, making the point that by preserving baseflow the system would not need the high flow events in order to realize an increase in reservoir elevations; essentially the idea that a system already having baseflow would contribute much more runoff during smaller precipitation events than one in which the alluvium was not recharged.

Andy had expressed the importance of the group to continue to stay involved with meetings and perhaps hold them more frequently now that the models are done so that brainstorming of management options can come forth to the table. Ray commented that now that the reservoirs are full there may not be the urgency to take action as there was with the drought conditions we witnessed for a number of years. He asked if we need more stakeholder involvement before going much further in the process. It was agreed by all that more stakeholder involvement is needed and that any information presented needs to be kept simple in order to prevent scaring folks off with the complexities of the models/results.

Before the meeting ended, Andy ensured the group that next time the GMD 4 HPA boundaries will be added to the model domains map for reference, he will look for a phreatophyte coverage,

and as Ray suggested at the very end of the meeting, he will look to see if there might be a program available similar to WTAP aimed at the alluvium for which the Solomon model areas could be targeted. Darci will continue to research phreatophyte removal and it was suggested that all those interested in pursuing the possible option of an ET reduction might do the same and share the information with the group at the next meeting. It was also agreed that future meetings will likely be handled via a conference call and Glance session to reduce travel costs and allow for more frequent meetings if warranted.

Next meeting: No date was decided and it was consensus that Working Group members would be contacted to determine a future meeting date and time.